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Obituary Notice of MR. JACOB R. ECKFELDT.

BY MR. DUBOIS.

(Read before the American Philosophical Society, Oct. 4th, 1872.)

Jacob R. Eckfeldt, late Assayer of the Mint, was the son of Adam and Margaretta Eckfeldt, and was born in Philadelphia March —, 1803. He was, therefore, in his seventieth year, at the time of decease, August 9th, 1872.

He early developed a studious mind, and a fondness for solid information, especially in the domains of physical and mechanical science. He was mainly educated at the classical academy of Dr. Wylie and Mr. Engles, celebrated in those days.

When he was grown up, and old enough to engage in business, he was placed in Mr. Greiner's Cotton Mill, at Trenton, as a subordinate manager, where he continued for several years, until that enterprise proved unsuccessful. After that, he was employed by Mr. Cloud, then Melter and Refiner of the Mint, to attend to the parting room.

In the Spring of 1832, Mr. John Richardson, who had been Assayer about one year, and did not find the employment congenial to his tastes (withal a man of good parts and highly esteemed), informed Mr. Eckfeldt that he intended to resign, and wished him to prepare to take the place. Mr. E. shrank from this responsibility and declined. But some of his friends who had influence with President Jackson presented his name with a strong recommendation and he was appointed without being asked as to his party preferences. This occurred on the 30th of April, 1832. He has therefore held the office over forty years.

When he entered upon the work, he had to encounter some embarrassments. The apparatus was old-fashioned, and not calculated for nice results. The silver assay had been well performed, without going to a close figure, for many years; but gold was little known in the country or at the Mint, and it is not surprising that its assay was incorrectly performed. Add to this, there was the coarse and cumbrous nomenclature, brought from the old country, of carats and grains for gold fineness, and so many grains to the pound for silver fineness.

Close upon all this, that is to say, in June, 1834, came the celebrated reduction in the standards of our gold coin, one of the chief measures of the Jackson administration. This changed gold from a curiosity to a currency; bullion and foreign coin flowed to the mint, and accuracy of assay was more than ever needful. Mr. Eckfeldt was equal to the emergency; and resolutely introduced reforms, which, at first, made the older officers stand in doubt. At this crisis he was taken down with small-pox; and shortly after, his valued foreman also. Both, however, recovered.

In those days, about the time the new mint edifice on Chestnut street was finishing, Mr. Peale was sent to London and Paris to observe the methods of assaying and refining, and to procure a new apparatus. We were thus supplied with French beams, weights, and cupel furnaces, and

with the appliances of Gay-Lussac's humid assay, and the printed details of the process. Soon after, Mr. Saxton, famous for his skill in constructing balances and other delicate instruments, returned from a long schooling in that line in London, and was employed in the Mint. Thus furnished, Mr. Eckfeldt felt himself "set up," and able to compete with the foreign assayers, and if he was ever more precise, it was because he disregarded certain allowances which had become a time-honored custom.

A large importation of fine gold bars from France, known as the French Indemnity, and which came because President Jackson declared he "would submit to nothing that was wrong," gave a fine opportunity for testing and comparing foreign assays; and it was generally found that these bars were somewhat below the alleged fineness. Still the deficit was inconsiderable; but it is characteristic of French gold coin, as well as bars.

It is not surprising, that he felt at first the inconvenience of passing from one form of nomenclature to another, though to a better one. A friend remarks, "I recall conversations with Mr. Eckfeldt, showing how seriously he felt the revolution. He would *think* in carats, and *report* in decimals. And I often recur to this as illustrating the kind of difficulties which would arise in case of a decimalising of weights and measures."

For some years prior to 1842, Mr. Eckfeldt and his assistant, in addition to their ordinary duties, engaged in the preparation of an original and comprehensive work on the Coins of all Nations; on the Varieties of Gold and Silver Bullion; on Counterfeit Coins, and on other subjects related thereto. This was published in 1842, and has long been regarded as a standard authority. In 1850, they issued a supplementary smaller work, and again in 1852.

As the United States increased in commerce, wealth and population, the Mint of course increased in work. In particular, Mexican dollars came in great quantities for recoinage. Not only were our vaults full, but our entries and corridors were at times crowded with rows of kegs. Every day, for years, we had the constant task of sixteen melts of silver ingots to melt and assay; and it was a great advantage and satisfaction to be supplied with the *humid* apparatus.

The success of gold mining in our Southern States, and the increasing commerce of New Orleans, gave rise to the establishment of three branch mints at the South, in 1837; and it devolved upon Mr. Eckfeldt to become schoolmaster, and educate the three assayers appointed for those places. The same had to be done again at a later date for other mints and assay offices.

In December, 1848, came the first lot of gold grains from California; and with the opening of the next year the tide set in most powerfully. I shall not here speak of this great turning-point in metallic currency any further than as it affected the mint, or rather the labor which it laid upon Mr. Eckfeldt and his department. As is well known, the lots were numerous, and the aggregate amount was enormous. Instead of making

gold assays by dozens, we had to go through with hundreds, every day following the arrival of each steamer. We procured young men as operators in the weigh-room and additional workmen in the laboratory; and in spite of all the help we were all overworked. Here let me say that the persons who have been educated by Mr. Eckfeldt to this profession have done credit to the selection that was made, not only by skill, diligence, and good character while here, but wherever they are now scattered to other mints and assay offices, or to different pursuits. No doubt they receive with profound sorrow the tidings of the decease of their instructor.

The gold pressure continued for about five years, when it was relieved by the creation of a government assay office in New York, and a branch mint at San Francisco. But directly sequent to this came the change of standard in silver coin, causing an immense recoinage in small pieces. Thus our daily assays continued to count by hundreds. This lasted for some years. When it began to slacken off, a law was passed for calling in the large copper coins and issuing in their stead pieces of copper-nickel alloy of much smaller size.

The analysis of Nickel alloys was not well laid down in the books, and the European or other assays which came with purchased lots showed an incorrect determination. Mr. Eckfeldt was therefore obliged to study out and perfect this assay, which is more tedious and laborious, though of less consequence, than the assay of the precious metals.

But it was his habit to be as scrupulous in minor matters as in major; and after the routine was well settled it went on with the same clock-work regularity as the other branches of assaying. I need not say that this nickel coinage imposed another heavy pressure upon the mint for years.

After this came the substitution of the Bronze alloy; and this called for another process of assay, and brought us a great deal of work.

I thus hastily review this sequence of gold, silver, nickel, and bronze, not only as an interesting part of Mint History, but to show the varied and abundant services of the untiring, energetic Principal Assayer, and the masterly skill with which he met every obligation.

His nervous system, naturally not one of repose, was a good deal impaired by the cares and labors of the first period just reviewed, and in 1853 he had to seek relief by travelling southward. This had a beneficial effect, but from that time onward, although he continued to be very active, there was a marked deterioration of health. Early in the Summer of 1870 he had a serious spell of illness, in which an affection of the heart was developed. This, by degrees, culminated in a dropsical state of the system, and on the 26th day of April, 1872, he was at the mint for the last time.

I would not undertake to define his various traits of character, professional or personal; but a few remarks in that way may be in place.

In every character we may observe apparent or real opposites; and in respect to Mr. Eckfeldt, there were two notable instances.

First, he was not ready in the use of language. There was wealth of thought, but not freedom of expression. This was always to some extent his embarrassment. If, with his stores of general and scientific knowledge, he had also possessed the powers of a speaker or writer, he would have made a larger impression. And yet he was communicative and sociable habitually. In his daily rides in the car, part-way to his house in the country, he was glad to find those with whom he could converse along the road. This is only an instance of his social temper, at home and abroad.

Again, it cannot be said that he made what might be considered inventions or discoveries of new processes. Inventors are really few; and they are generally much indebted to those who come after them and improve upon them. And yet his skill and success as an Assayer and Analyst largely consisted in his power of finding out what was defective or erroneous, and in applying the proper remedy. It often seemed that what was a puzzle to others was to him a matter of quick insight.

In the assays of certain complex alloys, and of low grades of gold and silver, he contrived various methods which are not in print, but which are of great use in the daily manipulations.

And here I may state that he not only introduced great accuracy and precision in the assays, but carried special investigations to a delicacy almost incredible. This was partly to be credited to the progressive improvement in assay balances, by which, after discarding the old silken cords, we had Deleuil's beam with steel stirrups; then Saxton's palladium beam with drop supports, then the more sensitive and more complicated Oertling, and at last the simple and complete Becker. So that, instead of weighing to a thousandth of the normal weight as formerly, we now have indications to the tenth of a thousandth, or even less.

If, therefore, curiosity or the promotion of science led him to inquire how much or rather how little silver there was in a certain kind of lead or gold in an ordinary brick or pile of gravel, he would begin with a pretty large sample, then carefully concentrate the precious metals, if any, and finally bring his visible speck to the balance, to determine a proportion in millionth parts. Only lately he found in a bar of Spanish lead, which is remarkably free from silver, the amount of one-third of an ounce of silver, in a ton of lead,—and much interest was excited by a publication some years ago, both in this country and across the Atlantic, of his experiment upon the brick-clay which underlies our city. Taking two samples from the center of the town and the suburbs he found they contained gold at the rate of nearly 12 grains (say fifty cents) to the ton of clay in its ordinary moisture. Other experiments went to prove the very general diffusion of gold, in infinitesimal proportions.

Some analysts, through want of exactitude, or for the pleasure of making a sensation, may produce very curious results; but Mr. Eckfeldt was conscientious, I may say, nervously scrupulous, about stating anything he was not sure of. Partly for that reason, partly for the very love

of work, he was laborious to a fault, all his life long. It can hardly be said to have shortened his days, for he well nigh attained to the limit and double the average of human life.

Although he did not take the same interest in rare and curious coins that his father did, and was not a student of numismatics, yet he had a cultivated taste in this way, and a fine appreciation of the principles and art by which a perfect piece is made.

He was baptized and confirmed in the Lutheran Church, and afterwards united with the Presbyterian Church in Ninth St., near his father's house. He was soon elected to the Eldership, and he was no honorary or nominal Elder, but fulfilled the duties of the office, and was valued for his solid judgment. He was moreover active in the Sunday-school, the Bible Society, and other modes of benevolent operation. Some years after he became a member and elder in the Arch street Church; and since his residence in the country has belonged to Marple Church, in Delaware county.

He was elected a member of this Society in January, 1843.

He was a man of feeling, as well as of principle; affectionate, as well as exact. He made new friends and cherished old ones. This disposition even increased with his years, and was not diminished when his mind had lost its power. There were many proofs of this, which may not here be repeated. But the writer may be excused for stating an instance in his own experience. As he stood by the bedside, one of the family asked Mr. Eckfeldt if he knew who it was. The very question started an agitation which was almost convulsive, and with extreme difficulty he said, "Do—you—suppose— Do—you—suppose——" and could say no more. But it was easy to supply the rest. "Do you suppose I should not know him, having been with him for thirty-nine years?"

In harmony with his religious sentiments he was a man of pure speech, of upright dealing, of modest demeanor, of benevolent heart, and of patriotic spirit. How could any one fail to recognize the advantage of daily association for many years with such a man?

I shall venture only one line as to a kind of dying testimony which we all value. In the few last weeks his mind was much clouded, and his speech nearly cut off, by the force of disease. Yet in a clear interval he was overheard to express his unreserved self-dedication to his Lord and Saviour.

The concluding remark may be offered that the Mint has sustained a great loss in losing so much skill, so much experience, so much exactness, such probity, and superiority to reproach, as were concentrated in this one man. We cherish the remembrance of his name and services which impart dignity and character to the history of this Institution.

Immediately after the fact of his decease meetings were held at the Mint in Philadelphia and at the branch Mint in San Francisco, at which addresses were made by the present director of the Mint and two former directors, and other gentlemen, expressive of strong regard and esteem

both official and personal ; and resolutions of the same tenor were unanimously adopted by the officers and workmen.

To this I will only add in conclusion, the unsought testimony, just received, of a gentleman who, after a service of fifty years in the Royal Mint at London, lately retired from the post of Queen's Assayer, which he had filled with great ability.

"I have to express my unfeigned regret at this loss to science, and especially our branch of it. I was not personally known to Mr. Eckfeldt; but I can say, his name and his works will live forever in the wide world.

I sympathize in the loss his relations will have to sustain."

Stated Meeting, Oct. 18th, 1872.

Present, 17 members.

DR. EMERSON in the chair.

Dr. Agnew and Mr. Coleman Sellers, newly elected members, were introduced to the presiding officer, and took their seats.

Letters accepting membership were received from Mr. Coleman Sellers, dated Philadelphia, October 12th, and from Dr. R. J. Levis, dated Arch and Thirteenth Streets, Philadelphia, October 14th, 1872.

A letter of envoy was received from the Imperial Academy at Vienna, dated May 8th, 1872.

Letters acknowledging the receipt of publications were received from the Asiatic Society of Bengal, June 15th, 1872 (83 to 85, XIV. i.); the Imp. Academy, Vienna, November 7th, 1871 (83, 85, 86, XIV. i, ii.); the Zoological Society, London, 87 Hanover Square, September 30th, 1872 (83 to 88, XIV. i. and iii.); the Royal Soc. Edinburgh, March 18th, 1872 (82); the Lyceum of N. H., New York, October 7th, 1872, (88). the University of Virginia, October 7th, 1872 (88); the American Academy, Boston, October 8th, 1872 (88); the Maryland Historical Society, Baltimore, October 7th, 1872 (88); the University of the City of New York, October 10th, 1872 (88); the New Jersey Historical Society, Newark, October 8th, 1872 (88); the Maine Historical Society (88), announcing also the decease of Mr. Ballard; the Essex Institute, Salem, October 11th, 1872 (88); and the Georgia Historical Society, Savannah, October 9th, 1872 (88).